MICHAEL C. BURGESS, M.D.
26TH DISTRICT, TEXAS

WASHINGTON OFFICE:
1721 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225–7772
www.house.gov/burgess

Congress of the United States
House of Representatives
Washington, DC 20515–4326

COMMITTEE:
ENERGY AND COMMERCE
SUBCOMMITTEES:
HEALTH
ENERGY AND AIR QUALITY
OVERSIGHT AND INVESTIGATIONS

HOUSE REPUBLICAN
POLICY COMMITTEE

CHAIRMAN:
MEDICARE AND MEDICAID
SUBCOMMITTEE

Medical Focus - Avian Flu Essentials

April 7, 2006

Spotlight on SARS and Lessons Learned

Dear Colleague:

In the twenty-first letter of the Avian Flu Essentials series, I will discuss some of the research findings about the transmission of SARS-associated coronaviruses and how the effectiveness of various disease control measures depend on these characteristics.

The length of the incubation period for communicable viruses like SARS or influenza is useful to determine, because it gives health officials information on how long a patient should be isolated from others and who might have become infected from that patient by contact. The incubation period in essence describes how long it takes for a person to manifest symptoms after exposure to a pathogen. The maximum incubation period for SARS-CoV is ten days. On the other hand, the incubation period for avian flu is shorter from two to five days on average.

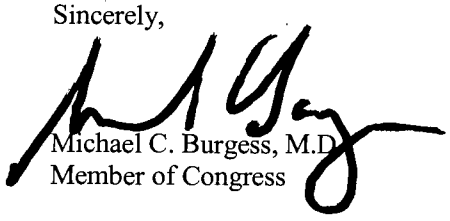
In addition, the viral load in infected SARS patients peaks during the second week. Therefore, transmission has mainly occurred with symptomatic SARS patients. This facilitates outbreak investigations and control. For example, airplane passengers were not infected by non-symptomatic SARS travelers. The challenge and concern with avian flu is the possibility of transmission prior to the appearance of symptoms.

The ability of airborne transmission by SARS-CoV was suggested from the analysis of the SARS outbreak at the Amoy Gardens housing complex in Hong Kong. In March 2003, the index patient visited and used the restroom in Building E. An outbreak of 321 cases ensued and lead to the hospitalization of hundreds of residents. Contamination was attributed to the design of the building and air flow. Close to half of the cases were traced back to Building E. The clustered appearance of cases a few days later supported the theory that a common source of infection was responsible for the spread of the virus, rather than personal contacts. Further investigation and study revealed that aerosols were spread from toilet flushing and the direction of air flow within Building E and other complexes correlated with the distribution of cases. Diagrams on the reverse of this letter illustrate this.

In addition, data was gathered on SARS cases with airplane passengers to look at the risk of infection from traveling. This revealed that individuals seated within three rows of the index patient were most at risk, but that several other people further away on the plane were also infected. Therefore, airborne transmission played a role as well and should be taken into consideration.

Controlling a disease that is airborne is more complex because the potential exposure to a pathogen is over greater distances. The amount of virus load in airborne transmission varies with different pathogens as well, which determines how effectively this mode is in spreading a disease. Therefore, ventilation systems in public buildings can affect the spread of airborne diseases. This reinforces the need for isolation wards and stronger air sanitation measures. Furthermore, it is important to minimize infectious disease exposure of individuals in hospital waiting rooms. Influenza is generally spread through respiratory droplets by coughing and sneezing. A better understanding of the viral modes of transmission for avian influenza will be necessary should human-to-human transmission become more widespread.

Sincerely,

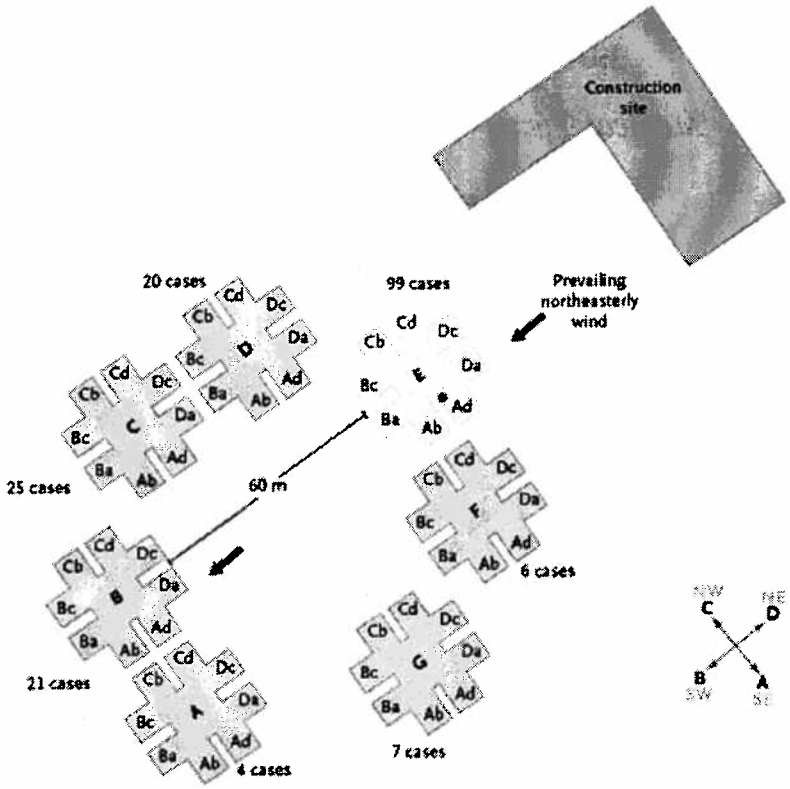


Michael C. Burgess, M.D.
Member of Congress

DISTRICT OFFICE:
1660 SOUTH STEMMONS FREEWAY
SUITE 230
LEWISVILLE, TX 75067
(972) 434–9700

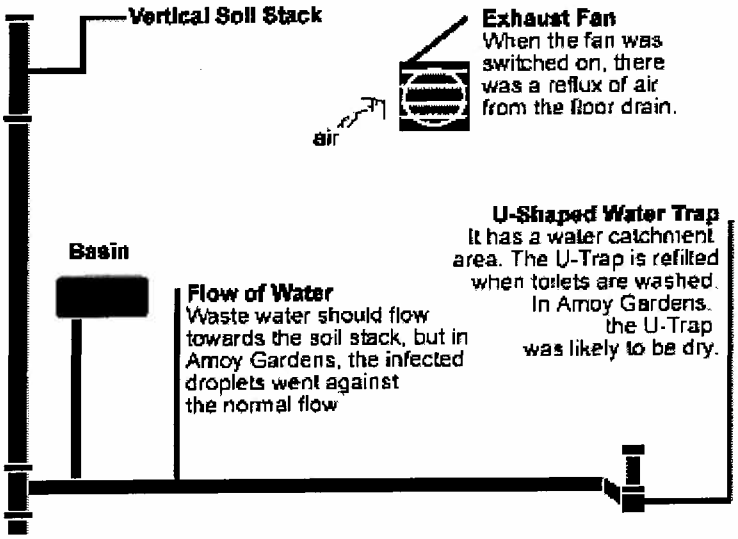
DISTRICT OFFICE:
1100 CIRCLE DRIVE
SUITE 200
FORT WORTH, TX 76119
(817) 531–8454

From the New England Journal of Medicine:



Distribution of Cases of SARS Infection in Buildings A to G in the Amoy Gardens Housing Estate:

The prevailing wind during the period of possible exposure was northeasterly, or roughly perpendicular to the exterior walls of apartment units Dc and Da in building E. The distance between buildings E and B is 60 m. The direction from which the wind blew shifted from nearly north to east and even southeast. The dot in building E indicates the unit that the index patient visited. The directional indicator for the units at the lower right-hand corner indicates the direction each unit faced. In the directional code (Ab, Ad, Ba, Bc, Cb, Cd, Da, Dc) used to designate an apartment unit, uppercase letters denote front-facing windows and lowercase letters side-facing windows.



Amoy Gardens building design - http://library.thinkquest.org/03oct/00738/amoygardens.html